



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,321	08/23/2005	Per Mansson	Mans3012/REF	3651

23364 7590 10/06/2006

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314

EXAMINER

JUNG, UNSU

ART UNIT	PAPER NUMBER
----------	--------------

1641

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,321

Applicant(s)

MANSSON ET AL.

Examiner

Unsu Jung

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-14 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' amendments to the specification and Fig.'s 12-15 in the reply filed on July 6, 2006 have been acknowledged and entered.
2. Applicants' amendments to claims 10, 12, and 13 in the reply filed on July 6, 2006 have been acknowledged and entered.
3. Claims 10-14 are pending.

Drawings

4. The drawings are objected to because Fig.'s 12-15 are missing axis labels. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application

Art Unit: 1641

must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicants' amended Fig.'s 12-15 to address the objection with respect to clarity of the scales in the Office Action filed on February 6, 2006 has been acknowledged. However, amended Fig.'s 12-15 remains without proper axis labels. According the to the specification, relative frequency change [Hz] plotted against time [s] are given in Fig.'s 12-15 (p17, lines 12-13). However, it is unclear which axis represents frequency and time. Therefore, the objection of the drawings with respect to Fig.'s 12-15 has been maintained.

Objections Withdrawn

5. Applicant's arguments, see p6, filed on July 6, 2006, with respect to the objection of the specification have been fully considered and are persuasive. The objection of the specification has been withdrawn in light of the amended specification in the reply filed on July 6, 2006.

6. Applicant's arguments, see p6, filed on July 6, 2006, with respect to the objection of claims 12 and 13 have been fully considered and are persuasive. The objection of claims 12 and 13 has been withdrawn in light of the amended claims 12 and 13 in the reply filed on July 6, 2006.

Rejections Withdrawn

7. Applicant's arguments, see p6, filed on July 6, 2006, with respect to the rejection under 35 U.S.C. 112, second paragraph have been fully considered and are persuasive. The rejection of claims 10-14 under 35 U.S.C. 112, second paragraph has been withdrawn in light of the amended claim 10 in the reply filed on July 6, 2006.

8. Applicant's arguments, see pp7-9, filed on July 6, 2006, with respect to the rejection under 35 U.S.C. 102(e) as being anticipated by Yoshimine et al. (U.S. PG Pub. No. US 2004/0051595 A1, Filed Dec. 7, 2001) have been fully considered and are persuasive. The rejection of claims 10 and 11 under 35 U.S.C. 102(e) as being anticipated by Yoshimine et al. has been withdrawn in light of the amended claim 10 in the reply filed on July 6, 2006.

Regarding the rejection of claims 10 and 11 under 35 U.S.C. 102(e) as being anticipated by Yoshimine et al. (U.S. PG Pub. No. US 2004/0051595 A1, Filed Dec. 7, 2001), a typo is noted as the rejection of claims 10 and 11 should have been made under 35 U.S.C. 102(e), not 102(b) in the Office Action filed on February 6, 2006.

9. Applicant's arguments, see pp7-9, filed on July 6, 2006, with respect to the rejection under 35 U.S.C. 103(a) as being unpatentable over Yoshimine et al. in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998) have been fully considered and are persuasive. The rejection of claims 12 and 13 under 35 U.S.C. 103(a) as being

Art Unit: 1641

unpatentable over Yoshimine et al. in view of Kawakami et al. has been withdrawn in light of the amended claim 10 in the reply filed on July 6, 2006.

10. Applicant's arguments, see pp7-9, filed on July 6, 2006, with respect to the rejection under 35 U.S.C. 103(a) as being unpatentable over Yoshimine et al. in view of Ricchio et al. (U.S. Patent No. 5,130,095, July 14, 1992) have been fully considered and are persuasive. The rejection of claim 14 under 35 U.S.C. 103(a) as being unpatentable over Yoshimine et al. in view of Ricchio et al. has been withdrawn in light of the amended claim 10 in the reply filed on July 6, 2006.

Claim Objections

11. Claim 10 is objected to because of the following informalities:

- a comma following the term "(10)" in line 7 should be deleted as the phrase following the comma refers to the "automatic mating operative engagement", which occurs as a result of "plugging the flow-through cell"; and
- the phrase "a pair of fluid connecting ports (122, 124) for communication with flowing means (70) for uninterrupted flowing of a solution (75) and a test solution aliquot (83) to, and through, the cell compartment (34)" should be moved to the preceding paragraph to more clearly indicate that the pair of fluid connecting ports is part of the receptor connector portion

Art Unit: 1641

not the piezoelectric crystal microbalances since the currently recited claim can be interpreted as either way.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998) in light of Luscher (U.S. Patent No. 3,585,527, Oct. 27, 1969).

Kawakami et al. anticipates instant claims by teaching a multiple piezoelectric crystal microbalance device comprising (Fig.'s 1-9):

- a connecting station, 100 and 101, for receiving and individually operating an array of piezoelectric crystal microbalances (reference elements 63 and 64 in Fig. 9);
- the piezoelectric crystal microbalances comprise a connecting panel, 112 and 113, (reference elements 10 in Fig. 6) having an array of cell connecting receptors, 118 (reference elements 11a-11c in Fig. 6), each cell connecting receptor comprising a receptor connector portion, 120, (Fig. 6) for automatic

Art Unit: 1641

mating operative engagement with a cell connector portion, 24, (Fig. 6) of a piezoelectric crystal microbalance flow-through cell, 10, (Fig. 4) upon plugging the flow through cell, 10, into the connecting station, wherein each connector portion comprises:

- a pair of electric connecting ports, 126 and 128, (reference elements 72 and 73 in Fig. 6) for communication with a power and measurement means, 130, (column 5, lines 52-62) for oscillating a piezoelectric crystal, 50, (reference elements 50a-50c in Fig.'s 2 and 3) carrying electrodes (reference elements 51a-51c in Fig. 7) in a cell compartment, 34, (square pits, column 5, lines 36-41) of one operatively engaged flow-through cell, 10, and for measuring oscillating characteristics of the piezoelectric crystal and
- a pair of fluid connecting ports, 122 and 124, (reference elements 61a-61c and 62a-62c in Fig. 1) for communication with flowing means for flowing a solution (75) (column 3, lines 17-30).

Although Kawakami et al. fails to specifically disclose two electrodes associated with the piezoelectric crystal (quartz), one of ordinary skill in the art would realize that the crystal/quartz oscillator of Kawakami et al. would inherently include two electrodes as Luscher teaches a well known crystal/quartz oscillator circuit, which includes a quartz crystal having two electrodes (column 2, lines 30-40). With respect to the limitation of providing flowing means for a test solution aliquot (83) to and through the cell compartment, one of ordinary skill in the art would recognize that the fluid connecting

Art Unit: 1641

ports of Kawakami et al. would inherently be able to provide a test solution aliquot through the cell compartment via the fluid connecting ports.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1641

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998) in view of Takeuchi et al. (U.S. Patent No. 6,326,563, Filed Sept. 22, 1999).

Kawakami et al. teaches the multiple piezoelectric crystal microbalance device as discussed above. However, Kawakami et al. fails to teach a multiple piezoelectric crystal microbalance device, wherein the individually operated piezoelectric crystal microbalances are electrostatically and electromagnetically shielded from each other. The current specification discloses that electrostatic and electromagnetic shielding can be provided by enclosing an individually operated piezoelectric crystal microbalance with a metal (p14, lines 6-10).

Takeuchi et al. teaches a method of shielding by coating a piezoelectric element with a conductive material such as a metal (column 17, lines 29-35). A shield layer consisting of a conductive material reduces external electromagnetic noise and improves measurement sensitivity of the piezoelectric element (column 6, lines 5-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the multiple piezoelectric crystal microbalance device of Kawakami et al. with a shield layer consisting of a conductive material such as metal as taught by Takeuchi et al. in order to reduce external electromagnetic noise and improve measurement sensitivity of the piezoelectric element.

Art Unit: 1641

With respect to claims 12 and 13, Kawakami et al. teaches a multiple piezoelectric crystal microbalance, wherein the connecting station, 100, comprises connection means for serial or parallel interconnection for the flowing of the solution, 75, and test solution aliquot, 83, to and through the cell compartment, 34, of the individual cells, 10 (column 8, lines 32-40).

18. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998) in view of Ricchio et al. (U.S. Patent No. 5,130,095, July 14, 1992).

Kawakami et al. teaches the multiple piezoelectric crystal microbalance device as discussed above. However, Kawakami et al. fails to teach a multiple piezoelectric crystal microbalance device, further comprising grounding means (108) for electrical grounding of the flow solution (75) and the test solution aliquot (83) to the cell compartment (34) of each of the flow-through cell (10).

Ricchio et al. teaches a flow cell having a solution grounding means on the inlet line for the sample adjacent to the entrance to the flow cell of fluid thereby minimizing electronic noise (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the multiple piezoelectric crystal microbalance device of Kawakami et al. with a method of grounding the inlet line of the flow cell device as taught by Ricchio et al. in order to minimize electronic noise.

Double Patenting

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 10, 12, and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 22 of copending Application No. 10/542,616 in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998).

The copending Application teaches a piezoelectric crystal microbalance comprising:

- a connecting panel (112, 113) having a cell connecting receptor (118),
each receptor comprising a receptor connector portion (120) for mating
operative engagement with a cell connector portion (24) of each

piezoelectric crystal microbalance flow-through cell (10), wherein each connector portion comprises a pair of electric connecting ports (126, 128) for communication with a power and measurement means (130) for oscillating a piezoelectric crystal (50) carrying two electrodes (56, 62) in a cell compartment (34) of one operatively engaged flow-through cell (10) and for measuring oscillating characteristics of the piezoelectric crystal and

- o a pair of fluid connecting ports (122, 124) for communication with flowing means for flowing a solution (75) and a test solution aliquot (83) to and through the cell compartment.

However, the copending Application fails to teach a sensor system comprising an array of piezoelectric crystal microbalances.

Kawakami et al. teaches a flow cell apparatus having an array of plate-shaped quartz oscillator (piezoelectric crystal microbalance) with a protein layer as a measuring element to detect adhesion of blood component on the protein layer (Abstract).

Kawakami et al. teaches a flow connection in both parallel (column 8, lines 32-34) and serial (Fig. 9) manner. Different samples can be supplied using a parallel flow connection (Example 1), while serial flow connection would require only a single pump to deliver one type of blood sample to all the flow cells in an array (Fig. 9 and column 8, lines 38-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the piezoelectric crystal microbalance device of the

Art Unit: 1641

compending Application in a array format with a serial and a parallel flow connection of the piezoelectric crystal microbalances as taught by Kawakami et al. in order to supply either single sample or a plurality of samples to the piezoelectric crystal balance device for use in an assay to detect blood components.

This is a provisional obviousness-type double patenting rejection.

21. Claims 10, 12, and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-47 of compending Application No. 10/539,065 in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998).

The compending Application teaches a piezoelectric crystal microbalance comprising:

- o a connecting panel (112, 113) having a cell connecting receptor (118), each receptor comprising a receptor connector portion (120) for mating operative engagement with a cell connector portion (24) of each piezoelectric crystal microbalance flow-through cell (10), wherein each connector portion comprises a pair of electric connecting ports (126, 128) for communication with a power and measurement means (130) for oscillating a piezoelectric crystal (50) carrying two electrodes (56, 62) in a cell compartment (34) of one operatively engaged flow-through cell (10) and for measuring oscillating characteristics of the piezoelectric crystal and

Art Unit: 1641

- a pair of fluid connecting ports (122, 124) for communication with flowing means for flowing a solution (75) and a test solution aliquot (83) to and through the cell compartment.

However, the copending Application fails to teach a sensor system comprising an array of piezoelectric crystal microbalances.

Kawakami et al. teaches a flow cell apparatus having an array of plate-shaped quartz oscillator (piezoelectric crystal microbalance) with a protein layer as a measuring element to detect adhesion of blood component on the protein layer (Abstract).

Kawakami et al. teaches a flow connection in both parallel (column 8, lines 32-34) and serial (Fig. 9) manner. Different samples can be supplied using a parallel flow connection (Example 1), while serial flow connection would require only a single pump to deliver one type of blood sample to all the flow cells in an array (Fig. 9 and column 8, lines 38-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the piezoelectric crystal microbalance device of the copending Application in a array format with a serial and a parallel flow connection of the piezoelectric crystal microbalances as taught by Kawakami et al. in order to supply either single sample or a plurality of samples to the piezoelectric crystal balance device for use in an assay to detect blood components.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

22. Applicant's arguments filed on July 6, 2006 have been fully considered but they are not persuasive.

23. Rejection under 35 U.S.C. 102(b) as being anticipated by Kawakami et al. in light of Luscher

With respect to the argument regarding that a whole piezoelectric flow-through cell is in one unit that is easily inserted into the connecting station of the multiple piezoelectric crystal microbalance device, Kawakami et al. teaches that piezoelectric crystal microbalance cell can be easily arranged (inserted or plugged) onto a connecting station as discussed above and in the previous Office Action filed on February 6, 2006 (Fig.'s 1-9). The claimed invention of multiple piezoelectric crystal microbalance differs from the device of Kawakami et al. in that the multiple piezoelectric crystal microbalance of the currently claimed invention comprises cell connecting receptors are individually separated so that each cell connecting receptor can be replaced or plugged onto the connecting station separately from other cell connecting receptors in the array of cell connecting receptors present in the connecting panel. However, it is noted that this feature, which distinguishes from Kawakami et al. are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that the receptor connecting portion is for automatic mating operative engagement with a cell connector portion of a piezoelectric

Art Unit: 1641

crystal microbalance flow-through cell upon plugging the flow-through cell into the connecting station, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The device of Kawakami et al. is capable of providing automatic mating operative engagement with a cell connector portion of a piezoelectric crystal microbalance flow-through cell upon plugging the flow-through cell into the connecting station as Kawakami et al. teaches that piezoelectric crystal microbalance cell can be arranged (inserted or plugged) onto a connecting station, which can be used in assays for detection of different targets in a sample (Abstract).

24. Rejection under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. in view of Takeuchi et al.

Applicants' argument that there is insufficient motivation to combine the teachings is not found persuasive in view of previously stated grounds of rejection. As stated above and in the Office Action filed on February 6, 2006, Takeuchi et al. teaches a method of shielding by coating a piezoelectric element with a conductive material such as a metal (column 17, lines 29-35). A shield layer consisting of a conductive material reduces external electromagnetic noise and improves measurement sensitivity of the piezoelectric element (column 6, lines 5-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the multiple piezoelectric crystal microbalance device of Kawakami et al. with a shield layer

Art Unit: 1641

consisting of a conductive material such as metal as taught by Takeuchi et al. in order to reduce external electromagnetic noise and improve measurement sensitivity of the piezoelectric element. The advantage of reducing external electromagnetic noise and improving measurement sensitivity of the piezoelectric element provides the motivation to combine the teachings of Kawakami et al. and Takeuchi et al. with a reasonable expectation of success as the shielding layer would provide improved sensitivity of the piezoelectric element, which is the sensing element in the multiple piezoelectric crystal microbalance device of Kawakami et al. In the rejection of claims 11, 12, and 13, Applicants' specification was not used as a teaching reference, rather Takeuchi et al. reference was used to arrive at the invention recited in claims 11, 12, and 13.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

25. Since the prior art fulfills all the limitations current recited in the claims, the invention as currently recited would read upon the prior art.

Conclusion

26. No claim is allowed.

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

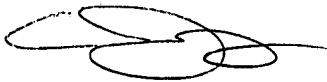
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is 571-272-8506. The examiner can normally be reached on M-F: 9-5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1641

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Unsu Jung, Ph.D.
Patent Examiner
Art Unit 1641


LONG V. LE 09/28/06
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600